

## ABSTRACT OF THE DISCLOSURE

A compound of the general formula:  $R^1R^2R^4MR^5$ , wherein  $R^1$ ,  $R^2$  and  $R^4$  are independently an aryl, alkyl, alkenyl or alkynyl group, wherein at least one of  $R^1$ ,  $R^2$  and  $R^4$  is fully or partially fluorinated, wherein M is selected from group 14 of the periodic table, and wherein  $R^5$  is either an alkoxy group,  $OR^3$ , or a halogen group, X. This compound formed can be further reacted to attach an additional organic R group, and/or hydrolyzed with one or more similar compounds (preferably having one or two R groups bound to M), to form a material having a molecular weight of from 500 to 10,000, which material can be deposited on various substrates as a coating or deposited and patterned for a waveguide or other optical device components. Methods for making and using compounds of the general formula  $R^1R^2R^4MR^5$  are also disclosed.